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Title :	Study on the Effect of Sub-Chronic Exposure to Lead acetate on Hepatic Glucose Metabolism in Rat
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Abstract :	As an environmental and occupational pollutant having a long history of toxicity, lead is known to adversely affect different parts of biological system. The purpose of this study was to evaluate the glucose homeostasis of rats sub-chronically administered multiple dose of lead acetate in drinking water. Male wistar rats were divided into four groups, the first group represented the health control animals, while the second, third and fourth groups received drinking water containing 0.05 %, 0.1 %, and 0.2 % lead acetate for 32 consecutively days. The results showed a disturbance in oral glucose tolerance test along with a dose dependent increase in the enzymatic activity of phosphoenolpyruvate carboxykinase and glucose 6-phophatase. In contrast, the activity of enzyme, glycogen phosphorylase, was lower in the groups received lead acetate. This effect was confirmed with the higher level of glycogen in the liver showing decreased capacity of hepatic glycogenolysis. The level of oxidative and inflammatory markers including lipid peroxidation, protein carbonyls, 8-hydroxyguanosine, and tumor necrosis factor-alpha were higher in the liver of rats receiving lead acetate in comparison with control group. It can be concluded that lead acetate has adverse effects on glucose homeostasis with reference to its production in the liver. Fasting or stress induced hepatic glucose production has been shifted from glycogenolysis as the first compensatory process toward gluconeogenesis as a process in which non-carbohydrate reservoir are used. This effect along with a stimulated inflammatory and oxidative response is witnessing for disrupted hepatic glucose metabolism in lead induced toxic stress.
Keywords :	Heavy metals, Lead acetate, Liver, Glucose